

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Withdrawn): A method of diagnosing or prognosticating a neurodegenerative disease in a subject, or determining whether a subject is at increased risk of developing said disease, comprising determining a level and/or an activity of (i) a transcription product of a gene coding for a cytosolic sulfotransferase family 4A member 1, and/or (ii) a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1 and/or (iii) a fragment, or derivative, or variant of said transcription or translation product, in a sample obtained from said subject and comparing said level and/or said activity to a reference value representing a known disease or health status, thereby diagnosing or prognosticating said neurodegenerative disease in said subject, or determining whether said subject is at increased risk of developing said neurodegenerative disease.

Claim 2 (Withdrawn): The method according to claim 1 wherein said neurodegenerative disease is Alzheimer's disease.

Claim 3 (Withdrawn): The method according to claim 1 wherein said cytosolic sulfotransferase family 4A member 1 is the cytosolic sulfotransferase family 4A member 1 splice variant 1 and/or the cytosolic sulfotransferase family 4A member 1 splice variant 2.

Claim 4 (Withdrawn): A kit for diagnosing or prognosticating a neurodegenerative disease in a subject, or determining the propensity or predisposition of a subject to develop such a disease by the steps of: (i) detecting in a sample obtained from said subject a level, or an activity, or both said level and said activity of a transcription product and/or of a translation product of a gene

coding for a cytosolic sulfotransferase family 4A member 1, and (ii) comparing said level or activity, or both said level and said activity of a transcription product and/or of a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1 to a reference value representing a known health status and/or to a reference value representing a known disease status, and said level, or activity, or both said level and said activity, of said transcription product and/or said translation product is varied compared to a reference value representing a known health status, and/or is similar or equal to a reference value representing a known disease status, said kit comprising:

at least one reagent which is selected from the group consisting of

(a) reagents that selectively detect a transcription product of a gene coding for a cytosolic sulfotransferase family 4A member 1 and

b) reagents that selectively detect a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1.

Claim 5 (Withdrawn): A method of treating or preventing a neurodegenerative disease in a subject comprising administering to said subject in a therapeutically or prophylactically effective amount an agent or agents which directly or indirectly affect an activity and/or a level of (i) a gene coding for a cytosolic sulfotransferase family 4A member 1, and/or (ii) a transcription product of a gene coding for a cytosolic sulfotransferase family 4A member 1, and/or (iii) a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1, and/or (iv) a fragment, or derivative, or variant of (i) to (iii).

Claim 6 (Withdrawn): A genetically altered non-human animal comprising a non-native gene sequence coding for a cytosolic sulfotransferase family 4A member 1, or a fragment, or a derivative, or a variant thereof.

Claim 7 (Withdrawn): The genetically altered non-human animal according to claim 6 wherein said non-human animal is a mammal or an invertebrate animal.

Claim 8 (Withdrawn): The genetically altered non-human animal according to claim 6, wherein the expression of said genetic alteration results in said non-human animal exhibiting a predisposition to developing symptoms, and/or displaying symptoms of neuropathology similar to a neurodegenerative disease.

Claim 9 (Withdrawn): The genetically altered non-human animal according to claim 6, wherein the expression of said genetic alteration results in said non-human animal which has a reduced risk of developing symptoms similar to a neurodegenerative disease, and/or which shows a reduction of said symptoms and/or which has no symptoms due to an effect caused by the expression of the gene used to genetically alter said non-human animal.

Claim 10 (Withdrawn): A method of developing diagnostics and therapeutics to treat neurodegenerative diseases, comprising screening, testing, or validating compounds, agents, and modulators using the genetically altered non-human animal according to claim 6.

Claim 11 (Currently Amended): A method for screening for a modulator of ~~neurodegenerative diseases, or related diseases or disorders of one or more substances selected from the group consisting of Alzheimer's disease,~~ wherein said modulator modulates either

- (i) a gene coding for a cytosolic sulfotransferase family 4A member 1,
- (ii) a transcription product of a gene coding for a cytosolic sulfotransferase family 4A member 1,
- (iii) a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1, ~~and~~ and/or

(iv) a fragment,~~or derivative~~, or variant of (i) to (iii),

said method comprising: (a) contacting a cell with a test compound; (b) measuring the activity and/or level of one or more substances recited in (i) to (iv); (c) measuring the activity and/or level of one or more substances recited in (i) to (iv) in a control cell not contacted with said test compound; and (d) comparing the levels and/or activities of the substance in the cells of step (b) and (c), wherein an alteration in the activity and/or level of substances in the contacted cells indicates that the test compound is a modulator of said ~~diseases or disorders~~ Alzheimer's disease.

Claim 12 (Currently Amended): A method of screening for a modulator of ~~neurodegenerative diseases, or related diseases or disorders of one or more substances selected from the group consisting of~~ Alzheimer's disease, wherein said modulator modulates either

(i) a gene coding for a cytosolic sulfotransferase family 4A member 1,

(ii) a transcription product of a gene coding for a cytosolic sulfotransferase family 4A member 1,

(iii) a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1, ~~and~~ and/or

(iv) a fragment,~~or derivative~~, or variant of (i) to (iii),

said method comprising: (a) administering a test compound to a test animal which is predisposed to developing or has already developed symptoms of ~~a neurodegenerative disease or related diseases or disorders~~ Alzheimer's disease in respect of the substances recited in (i) to (iv); (b) measuring the activity and/or level of one or more substances recited in (i) to (iv); (c) measuring the activity and/or level of one or more substances recited in (i) or (iv) in a matched control animal which is predisposed to developing or has already developed symptoms of a ~~neurodegenerative disease or related diseases or disorders~~ Alzheimer's disease in respect to the substances recited in (i) to (iv) and to which animal no such test compound has been

administered; (d) comparing the activity and/or level of the substance in the animals of step (b) and (c), wherein an alteration in the activity and/or level of substances in the test animal indicates that the test compound is a modulator of said ~~diseases or disorders~~ Alzheimer's disease.

Claim 13 (Currently Amended): The method according to claim 12 wherein said test animal and/or said control animal is a genetically altered non-human animal which expresses the gene coding for a cytosolic sulfotransferase family 4A member 1, or a fragment, ~~or a derivative~~, or a variant thereof, under the control of a transcriptional control element which is not the native a cytosolic sulfotransferase family 4A member 1 gene transcriptional control element.

Claim 14 (Withdrawn): An assay for testing a compound, or a plurality of compounds for inhibition of binding between a ligand and a cytosolic sulfotransferase family 4A member 1 protein, or a fragment, or derivative, or variant thereof, said assay comprising the steps of:

- (i) adding a liquid suspension of said cytosolic sulfotransferase family 4A member 1 protein, or a fragment, or derivative, or variant thereof, to a plurality of containers;
- (ii) adding a compound or a plurality of compounds to be screened for said inhibition of binding to said plurality of containers;
- (iii) adding a detectable ligand to said containers;
- (iv) incubating the liquid suspension of said cytosolic sulfotransferase family 4A member 1 protein, or said fragment, or derivative, or variant thereof, and said compound or compounds, and said ligand;
- (v) measuring amounts of detectable ligand associated with said cytosolic sulfotransferase family 4A member 1 protein, or with said fragment, or derivative, or variant thereof; and
- (vi) determining the degree of inhibition by one or more of said compounds of binding of said ligand to said cytosolic sulfotransferase family 4A member 1 protein, or said fragment, or derivative, or variant thereof.

Claim 15 (Withdrawn): The method of claim 1, comprising determining a level and/or an activity of protein molecules of SEQ ID NO. 1 and/or SEQ ID NO. 2, said protein molecules being translation products of the gene coding for a cytosolic sulfotransferase family 4A member 1, or fragments, or derivatives, or variants thereof.

Claim 16 (Currently Amended): The method of claim 11, wherein said screening is for a modulator of protein molecules of SEQ ID NO. 1 and/or SEQ ID NO. 2, said protein molecules being translation products of the gene coding for a cytosolic sulfotransferase family 4A member 1, or fragments, ~~or derivatives~~, or variants thereof, wherein said modulator is a reagent or compound for preventing, or treating, or ameliorating ~~a neurodegenerative disease~~ Alzheimer's disease.

Claim 17 (Withdrawn): A method for detecting the pathological state of a cell in a sample obtained from a subject, comprising immunocytochemical staining of said cell with an antibody specifically immunoreactive with an immunogen, wherein said immunogen is a translation product of a gene coding for a cytosolic sulfotransferase family 4A member 1, SEQ ID NO. 1 or SEQ ID NO. 2, or a fragment, or derivative, or variant thereof, wherein an altered degree of staining, or an altered staining pattern in said cell compared to a cell representing a known health status indicates a pathological state of said cell which relates to a neurodegenerative disease.

Claim 18 (Withdrawn): The kit of claim 4, wherein said neurodegenerative disease is Alzheimer's disease.

Claim 19 (Withdrawn): The method of claim 5, wherein said neurodegenerative disease is Alzheimer's disease.

Claim 20 (Withdrawn): The genetically altered non-human animal according to claim 7 wherein said mammal is a rodent, mouse, rat or guinea pig and said invertebrate animal is an insect or a fly.

Claim 21 (Withdrawn): The genetically altered non-human animal according to claim 20 wherein said fly is *Drosophila melanogaster*.

Claim 22 (Withdrawn): The genetically altered non-human animal according to claim 8, wherein said neurodegenerative disease is Alzheimer's disease.

Claim 23 (Withdrawn): The genetically altered non-human animal according to claim 9, wherein said neurodegenerative disease is Alzheimer's disease.

Claim 24 (Withdrawn): The method of claim 10, wherein said neurodegenerative disease is Alzheimer's disease.

Claim 25 (Cancelled)

Claim 26 (Cancelled)

Claim 27 (Withdrawn): The assay of claim 14, wherein said detectable ligand is a fluorescently detectable ligand.

Claim 28 (Withdrawn): The kit of claim 4, wherein said translation product is one or more protein molecules of SEQ ID NO. 1 and/or SEQ ID NO. 2, said protein molecules being

translation products of the gene coding for a cytosolic sulfotransferase family 4A member 1, or fragments, or derivatives, or variants thereof.

Claim 29 (Currently Amended): The method of claim 12, wherein said screening is for a modulator of protein molecules of SEQ ID NO. 1 and/or SEQ ID NO. 2, said protein molecules being translation products of the gene coding for a cytosolic sulfotransferase family 4A member 1, or fragments, ~~or derivatives~~, or variants thereof, wherein said modulator is a reagent or compound for preventing, or treating, or ameliorating ~~a neurodegenerative disease~~ Alzheimer's disease.

Claim 30 (Withdrawn): The method of claim 17, wherein said neurodegenerative disease is Alzheimer's disease.